

ferred to under the heading "Cold-wave warnings." The display called for northwest warnings on the lower Lakes, Lake Huron, and extreme eastern Lake Superior. Owing to the great rapidity with which this storm moved, the warnings on Lake Huron and western Lake Erie were lowered on the afternoon of the 30th and at night over the remainder of the lower Lakes. The maximum wind velocity reported during this storm was 72 miles an hour from the west at Buffalo, N. Y.

*Fire-weather warnings.*—At the request of the State forester, fire-weather warnings for northeastern Minnesota, where conditions had become serious, were begun on the 9th and were continued until the 30th.

The usual long-range forecasts for the benefit of shippers of fruit from the Pacific Northwest were begun near the close of the month to the Northwestern Fruit Exchange and the Wenatchee Valley Traffic Association, Wenatchee, Wash., and a new address added was that of the Fruit Express Co., Spokane, Wash. These forecasts have to do with expected temperature conditions in Montana and the Dakotas.—*C. A. Donnel.*

#### NEW ORLEANS FORECAST DISTRICT.

Weather conditions during this month were dominated to an unusual degree by anticyclonic areas having marked characteristics.

Three large sluggish areas of high pressure advancing southeastward over the eastern Rocky Mountain slope during October 1-4, 24-26, and 28-31 were attended by much rain in the northwestern portion of the district, the rainfall at Amarillo, Abilene, and Oklahoma City exceeding the previous highest of record for October, mainly because of the heavy rains occurring in connection with these areas of high pressure. In contrast to these remarkable anticyclonic conditions, another area of high pressure, following the movement of a sluggish trough of low pressure over the central districts, dominated conditions from the 18th to the 23d, with clear and frosty weather extending much farther south in the Mississippi Valley than is usual at the season, frost in Louisiana occurring southward to the west coast at times. In the eastern portion of the district the frosty weather was prolonged until the 26th by fresh accession of high pressure from the north while rainy weather prevailed in Oklahoma and northwestern Texas.

Another important feature was the storm that developed in the western portion of the Gulf on the 15th. Special observations were obtained from coast stations, and the Washington office supplied information based on ship reports. The indications favored a northward movement, with increasing winds, and storm warnings were issued accordingly at 12:30 p. m., southeast storm warnings for the Louisiana coast and northeast warnings for the Texas coast. On the Louisiana coast the storm warnings were replaced at 10 p. m. by hurricane warnings ordered from Washington and lowered the next morning after the storm passed inland.

The storm center reached the coast at about 1 a. m. on the 16th, near longitude  $91^{\circ} 30'$  west, slightly west of Morgan City, La., and moved rapidly northward over Louisiana, without apparent change in lowest barometer until after reaching the vicinity of Vicksburg at 7 a. m. Reports of aneroid barometers, after comparison with standard instruments, show a lowest reading of 29.25 inches at Morgan City at 1:20 a. m. to 2:45 a. m. The wind reached a velocity of 49 miles an hour at Burrwood. The velocity of 40 miles an hour was observed at Morgan City on an anemometer without continuous record, but

equipped with a push-button indicator. Verifying velocity for storm warnings occurred as far west as Galveston.

On the coast south of Morgan City, with tide about 3 feet above normal, wind and waves carried two empty barges to land, leaving them stranded as the water receded, causing loss of their use in transportation of shells until they could be refloated. Other damage on the Louisiana coast, aside from the blowing down of telegraph and telephone wires, was slight. Extensive distribution was given to all warnings.

Within a long trough of low pressure extending from Canada to the Caribbean Sea, a minor disturbance developed on the 17th, following a course just slightly east of the preceding storm. Northeast storm warnings were ordered for the Louisiana Coast at 1:30 p. m.; but the disturbance had only slight effect on the Louisiana coast, the higher winds being to the eastward. The storm warnings were ordered down at 9 p. m. but with caution for small vessels proceeding eastward.

Small-craft warnings were displayed on the Louisiana coast on the 8th and 9th because of strong barometric gradient on the southern side of an area of high pressure crested over the Ohio Valley. On the 9th the warning was changed to northeast storm warning. Small-craft warnings were displayed on the west coast of Texas on the afternoon of the 13th and on the entire Texas coast on the 18th.

Frost warnings were issued on the 13th, 14th, 17th, 18th, 19th, 20th, 21st, 22d, 23d, 24th, 25th, 26th, 29th, and 31st, for portions of the district. Owing to slow clearing frost did not occur as forecast on the first two dates but generally occurred as predicted thereafter. Cold-wave warnings were issued for the northwestern portion of the district at night on the 29th and were extended the following morning over the northeastern and central portions of the district. Temperatures of freezing, or slightly higher, occurred in the northern portion of the district.

Fire-weather warnings were sent to the State forester of Texas on the 13th and 30th, particularly for increase in the velocity of northerly winds. Conditions prevailed as predicted.

Special forecasts were issued for the State Fair at Shreveport, October 18 to 28, and weather occurred as forecast.—*R. A. Dyke.*

#### DENVER FORECAST DISTRICT.

High pressures prevailed during most of the month in the northern and eastern portions of the Rocky Mountain region, with frequent lows passing across the southern portion of the district. As a result, the precipitation on the eastern slope of Colorado and New Mexico, was much above normal, with numerous heavy downpours from the 2d to the 4th and on the 12th and 13th. Heavy rains also fell in eastern Colorado on the 23d and 24th, turning to heavy snow in and near the mountains on the latter date, the heavy rains extending to eastern New Mexico on the 25th. West of the continental divide the precipitation was much lower than the average. The month was decidedly cooler than the normal in about all portions of the district.

A cold-wave warning was issued for north-central Arizona on the morning of the 17th, when the temperature at Flagstaff was  $50^{\circ}$ . A minimum temperature of  $16^{\circ}$  was registered at that station during the night of the 18th-19th.

Warnings of frost and also of freezing temperature were issued for various sections in the district on a number of dates as the weather conditions seemed to require.